Celebrating 100 Years of Maryland Extension

In 2014 we are celebrating the 100th anniversary of the Smith-Lever Act, which established the Cooperative Extension Service, a state by state national network of educators who extend university based research and knowledge to the people.

Land-Grant Universities were founded by the Morrill Act of 1862 to focus on the teaching of agriculture, science and engineering. In the Old Line state, this includes both the University of Maryland-College Park and the University of Maryland Eastern Shore. The Smith Lever Act of 1914 furthers the mission of land-grant universi-
ties and provides funding for outreach to the public, promoting a shared partnership between Federal, State, and County governments. This shared funding allows University educators to be placed in local communities, expediting the spread of current research directly to the people of the state. We will be celebrating our anniversary across Maryland and the Lower Shore in 2014, so be on the lookout for upcoming events!

Pencil to Plow

Nine aspiring farmers completed the eight week Pencil to Plow program this April. Participants in this year’s class were interested in a diverse set of topics including: CSA’s; mushrooms; hops; tomatoes; and goats.

Pencil to Plow trains beginning farmers in Agricultural Entrepreneurship and includes business topics like market research, bookkeeping, and leases. Each session was supplemented by presentations from ag business experts, CPA’s, bankers, insurance agents, and extension experts. The course is meant as an introduction to the business side of agriculture, to keep new farmers from getting overwhelmed.

We would like to thank the Eastern Shore Entrepreneurship Center, Mid Atlantic Farm Credit, Farmers Bank of Willards, and Beginning Farmer Success for sponsoring this program.

UME Agriculture Contacts

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Phosphorus (P) is essential to all forms of life and is required for crop production. However, when too much P gets into surface water, like the Chesapeake Bay, it can cause significant environmental problems. Besides agriculture, there are many sources of P to the Chesapeake Bay, including waste water treatment discharges, runoff from residential areas or golf course, and natural geologic P. The Phosphorus Management Tool, also known as the PMT, is an update to the old P Site Index (PSI) and was designed as a tool to help farmers manage P application. If a farmer has a soil test value above 150 FIV and they want to apply P, for example with poultry manure, they must first run a PMT. The PMT will help guide the best way and rate to apply P so as to minimize potential environmental impact. The PMT is not a quantitative estimate of how much P can move (i.e. a value like 5 lbs/P/acre), but a relative risk estimate of potential P loss. In other words, a field that scores 50 on the PMT is expected to have greater potential for P transport than a field that scores 25, but it doesn’t provide any exact value on how much P might be lost.

The PMT is designed to observe how site characteristics and management practices affect P movement. Often high P from soil tests are associated with P loss to surface water. However, most research indicates that this is not the case. Management practices (like buffer strips, method of P application, or tillage) and site characteristics (soil type or slope) can have a far greater impact on potential P transport than the source of P (e.g., chemical fertilizer, manure, or soil test P). In certain situations a field with very low soil P values can lose far more P in runoff than a field with very high soil P values. The PMT is designed to evaluate all the factors that contribute to potential P loss from a farm field.

Based on years of research at several land grant institutions, agronomic recommendations of additional P are not made when soil concentrations are above 100 FIV. This would mean that purchasing and applying additional P would not be economically beneficial, as yield will not increase. Commercial fertilizers can be custom blended to provide only the nutrients required. However, manure has to be applied with its inherent nitrogen and phosphorus, and may not match crop uptake, leading to a buildup of P.

On the Delmarva, our economy benefits from the poultry industry, allowing for cooperation between grain and poultry farmers. The poultry industry is a valuable consumer of locally grown grain and in turn, fields receive a necessary organic fertilizer. This can be an ideal sustainable system, where nutrients are cycled between crops, livestock and soils. While a grain crop might not benefit from the additional P in the poultry manure, it will benefit from both nitrogen and potassium. Other benefits from manure include the liming properties and increased organic matter.

Nonetheless, if manure is applied and there is already plenty of P in the soil, build-up can occur and the risk of P loss may increase. Therefore, while there is no agronomic cost of applying more P than is needed (crop yields do not suffer when P is over applied), there may be a potential environmental cost. On the Lower Shore, the abundance of poultry litter, soils lower in aluminum and iron oxides, and shallow water tables can increase risk for P transport to surface water.

The PMT attempts to solve this issue with at least 30 years of practical field-study science. The PMT helps us to understand relative transport risks and is based on known mechanisms of P movement in soils, including 1) subsurface, 2) runoff, and 3) particulate transport. Subsurface transport is important for the Lower Shore, since it becomes a factor when artificial drainage, like ditches, are present. Both runoff and particulate transport may have a greater effect on the Western Shore, where rolling hills increase runoff potential. For subsurface transport, concentrations of mobile P are related to mineral content. Aluminum, iron, and calcium minerals may all absorb P, preventing leaching from fields. On the other hand, as a sponge, these minerals can only absorb so much phosphorus. Once a soil is saturated with P, it may remain dissolved in soil water, moving into drainage ditches and into surrounding surface waters. The PMT attempts to breakout all three factors (subsurface, runoff, particulate) so that each individual farm in Maryland can reduce P mobility based on site-specific characteristics.

The higher than normal transport potential and historically high soil P concentrations on the Lower Shore make managing P here a difficult task, and can cause potential economic hardship. Balancing the economic needs of agriculture on the lower shore with protection of our natural resources will require all ideas and innovations to be considered. Poultry manure is a valuable resource for crop production, with many nutrients besides P, value as a liming material, and valuable organic matter. Nonetheless, too much of a good things in some instances can be a bad thing.
**Maryland Department of Agriculture “Manure Happens”**

The Maryland Department of Agriculture has launched a new web portal as part of its “Manure Happens” public outreach campaign. The new page centralizes resources for the general public to better understand farming practices. It uses advertisements like these to explain that manure is recycled nutrients or that poultry litter is piled up so it can crust over and shed water. See more at www.maryland.mds.gov/manure.

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**Somerset Poultry Growers Meeting**

A poultry growers meeting is scheduled for Monday, May 12 (11am-2pm) at the Somerset County Extension Office. The event will cover legal issues such as 3rd parties on the farm, animal welfare, and right to farm. Paul Goeringer, Extension Legal Specialist and Economist, will also be there to answer questions.

Please contact Jon Moyle at 410-742-1178 or jmoyle@umd.edu for more information.

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**Josh Emhoff Leaving the Wicomico Office**

After five years of writing nutrient management plans for Wicomico County, Josh Emhoff is moving on to a new job. The Wicomico office abandoned New Years resolutions for a week of pizza, homemade Indian food, and Chinese buffets.

Josh will be temporarily replaced two days a week by Maegan Perdue, nutrient management advisor for Somerset County. You can contact her at mperdue@umd.edu or at 410-651-1350.

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**Changes in New Farm Bill Conservation Programs**

Below is a quick summary of changes made to conservation programs in the new Farm Bill, enacted on February 7, 2014. These programs are administered by USDA’s Natural Resources Conservation Service. The new Farm Bill streamlines conservation programs that enable farmers, ranchers and forest landowners to get assistance. To get started with NRCS, visit www.nrcs.usda.gov/GetStarted or visit your local USDA service center.

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Alternative Manure Technologies

There are several proposed alternative uses for manure besides land application. Some of these involve conversion to energy (incineration, pyrolysis) while others may offer nutrient extraction. While all of these technologies are scientifically achievable, getting them to be economically efficient may prove harder. With the increasing limits of nutrient application to Maryland soils, these technologies will be necessary to maintain sustainable poultry and grain operations on the Delmarva Peninsula.

Compaction/Densification

Transporting manure off of the Eastern Shore is one way to solve excess nutrient issues, but shipping can be expensive. One way to make it cost effective is to reduce litter volume by condensing it into a pellet. Pelletizing dries and compacts litter into a uniform fuel or fertilizer source. The concentration of nutrients remains the same, but a reduced volume may allow it to be moved further.

Biological (Microbial) Breakdown

A popular method for all types of organic materials is composting, which involves microbial breakdown under aerobic (oxygen rich) conditions. Microbes consume organic material as a food source, releasing some carbon as CO₂ and reducing the overall mass of the manure. Although the carbon is lost, phosphorus remains, increasing in concentration. Unfortunately, there can be a significant loss of nitrogen as ammonia gas (NH₃ volatilization). The lower nitrogen and greater phosphorus do not help farmers hoping to apply on the shore, but the lower mass and greater concentration of phosphorus may lower the cost of shipping manure. In that case it will be easier to export nutrients from the Chesapeake Bay watershed.

**Anaerobic digestion** is another biological process that breaks down manure, but under anaerobic (oxygen poor) conditions. Under low oxygen, microbes can produce a biogas like methane (CH₄), which can then be burned for energy. Following digestion, the remaining solids and liquids can be processed by composting or used as a fertilizer. **Anaerobic digestion** is a popular way to process waste and produce energy, but can require constant attention and manure inputs.

**Thermal (Heat) Energy Conversion**

While methane produced from **anaerobic digestion** can be burned for energy, direct **incineration** of poultry can also be performed. Simple combustion of manure will produce an ash byproduct with a high P concentration, and also release some ash, N₂O and CO into the atmosphere. The atmospheric pollution associated with burning manure makes **incineration** a less desirable option. Two other processes that use thermal (heat) energy to convert manure are **pyrolysis** and **gasification**. When organic materials are heated with no oxygen, they can decompose into gases and charcoal. This is known as **pyrolysis**. The gas produced can be condensed into a “bio-oil” and used as a fuel.
Alternative Manure Technologies con’t……

The solid charcoal material from pyrolysis is called biochar. It has been proposed to be both a carbon sequestration agent and a potential fertilizer. The famous terra preta (black earth) soils in South America were created by native farmers trying to increase soil fertility. They used both biochar and manure to accomplish this.

Gasification is similar to pyrolysis, but includes a small amount of oxygen. It converts charcoal materials into a biogas, which itself can be used for energy. This process is presently used in some coal power plants, converting hydrocarbons from coal into combustible gases like CH₄.

Nutrient Extraction

Nutrient extraction doesn’t involve energy conversion, it simply strips the phosphorus from the poultry litter. A nutrient extraction procedure can remove phosphorus using mineral or organic acids. The extracted phosphorus can be precipitated (turned into a solid) by adding lime. This precipitated fertilizer can be less than 15% of the original volume, making it easier to transport off the shore. The remaining litter still retains some nitrogen, but with up to 90% of the phosphorus moved, it may be a more efficient fertilizer.

Summary

All of the above methods are alternatives to the land application of manures. Some methods are established in industry, like anaerobic digestion while others like the nutrient extraction can be added to them. As of yet, none are proven solutions for the Delmarva region and caution should be taken before throttling ahead. This overview is meant as a simple education of present ideas, so that readers can make informed decisions should public investments be necessary.

Further reading:


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An Alternative Poultry Litter Storage Technique

Scientists in the Plant and Soil Sciences Department at Oklahoma State have developed an alternative composting technique. Like other forms of composting, it will degrade litter carbon and reduce the overall mass. This will also increase the phosphorus and potassium concentrations, allowing the composted litter to be transported further from the source.

The process requires the litter to be only 60% dry matter before covering with a semi-permeable tarp. After one month the litter can be turned with a front end loader and covered again. Perforated pipes are an additional option for the pile, which can be placed onto the ground before the litter is added. The pipes increased aeration to the center of the pile, so there was an effective breakdown of the litter, without turning it over. The tarp will prevent the loss of nitrogen by volatilization as ammonia (gas).

Maryland Ag Census Data

The 2012 Census of Agriculture found that in Maryland:

- Value of crops, including nursery/greenhouse crops, increased 67 percent to $1.05 billion.
- Value of livestock, poultry and their products increased 1 percent to $1.2 billion.
- Government payments (including federal, state, local) received increased by 8 percent totaling $36 million.
- Nearly half (49 percent) of farms are less than 50 acres.
- Principal operators with Spanish, Hispanic or Latino origin are up 27 percent (25 people), and Asian operators are up 18 percent (15 people) from 2007.
- Only 48.9 percent of farm operators state that farming is their primary occupation.
- Average age of farmer is 59 years compared to 57.3 in 2007.  

Source: Maryland Department of Agriculture

Maryland Flock Testing

Fair season is approaching and all poultry for exhibition are required to be tested for Pullorum-Typhoid. The tests must be performed within 90 days of exhibition.

For a list of Maryland certified poultry testers see the MDA website or contact your local extension office:

http://mda.maryland.gov/animalHealth/Documents/MD_PoultryTesters_2013.docx

Porcine Endemic Virus

Porcine epidemic diarrhea virus (PEDV) will have a large impact on pork production through 2015. Up to 60% of the U.S. breeding herd has been affected by PEDV and is spreading into Canada and Mexico. While this may not impact the Lower Shore directly, grain prices could be adversely affected with lower pork production. On the other hand, with less pork and beef on the market, U.S. poultry farmers could see increased demand this summer.

Source: National Hog Farmer

Got Vultures?

Do you have issues with vultures around compost piles? A survey is being compiled by UME to see if black and/or turkey vultures are an issue on poultry operations. If you have vultures showing up around your compost piles, contact Dr. Jon Moyle, UME Poultry Specialist, at 410-742-1178 or jmoyle@umd.edu.

4-H Children’s Farm Tour

The 4-H Children’s Farm Tour will be offered again this year at Beechnut Dairy Farm in Mardela Springs. This event is designed to help young children gain an up close view of real agriculture and why it’s so important to our lives. Volunteers are needed to help man the learning stations. You can volunteer for one or all three days!

Where: Beechnut Dairy Farm, Mardela Springs

When: May 6, 7, and 8

Please contact Kay at the Wicomico 4-H Office:
410-749-6141 x 101 or kriall@umd.edu
Proline for Commercial Vegetable Production

Kate Everts
Professor & Extension Specialist, Plant Pathology
University of Maryland and University of Delaware

The 2014 version of the Commercial Vegetable Production Recommendations is available in print, for purchase, from your county extension educator. In addition, the “Recommendations” are available online at the University of Maryland Extension site (full link is provided below)

A few new fungicide received registrations after the “Recommendations,” went to print:

- **Proline** has received a supplemental label for cucurbit vegetables. Target diseases include Fusarium wilt (*Fusarium oxysporum*), gummy stem blight (*Didymella spp.*), southern blight (*Sclerotium rolfsii*), and powdery mildew (*Sphaerotheca fuliginea Podosphaera xanthii*) (*Erysipheichoracearum*). Proline may be applied by either ground or chemigation application (including drip irrigation). Do not use in the transplant water or in the greenhouse.

- We studied management of Fusarium wilt on watermelon with Proline at the UM LESREC Farm a few years ago. In our trials three applications through the drip were necessary for season long management. Unfortunately only one soil (drip) application is allowed on the label. Up to two additional foliar applications may also be applied.

- Brassica leafy vegetables group, which includes broccoli, Chinese cabbage, collards, kale and mustard greens, received a label for Priaxor. Target diseases include Alternaria leaf spot, anthracnose, Cercospora leaf spot, Rhizoctonia blight and white rust.

- Bulb vegetables, which include garlic, leek, onion and shallot, received a supplemental label for Merivon. Target disease include powdery mildew, purple blotch, Stenphyllum leaf blight, and Botrytis.

- Cucurbits (pumpkin, gourds, cantaloupe, watermelon, squash, etc.) also received a supplemental label for Merivon. Target diseases include Alternaria leaf blight, powdery mildew, anthracnose, Cercospora leaf spot, gummy stem blight, and Microdochium blight.

- Leafy vegetables, including lettuce, spinach and Swiss chard, also received a supplemental label for Merivon. Target diseases include Alternaria leaf spot, anthracnose, powdery mildew, Septoria leaf spot, white rust, lettuce drop, and downy mildew.

Selected root vegetables including, beet, carrot, parsley, radish, and turnip, received a supplemental label for Merivon. Target diseases include Alternaria leaf spot and Cercospora leaf spot.

**Read the labels carefully before use.** These products should be used in ways that minimize resistance development.

University of Maryland Extension 2014 Commercial Vegetable Production Recommendations:


Maryland Farm and Harvest is online! Watch all of the episodes over the internet:

http://video.mpt.tv/program/maryland-farm-harvest/

Shows will be rebroadcast through August and new episodes will premiere in late October.

Tuesdays-7pm
Thursdays-11:30pm
Sundays-6am
EXTENSION EVENTS

5/2-4  Maryland 4-H Shooting Sports Instructor - Thendara 4-H Center
       Contact Conrad Arnold (carnold@umd.edu)

5/6-8  Children's 4-H Farm Tour - Beechnut Dairy Farm, Mardela Springs

5/10  Eastern Shore Spring Show - Queen Anne's County 4-H Park

5/12  Poultry Growers Meeting - Somerset Extension, Princess Anne,
      Strawberry Twilight Tour-Wye Research and Education Center

OTHER EVENTS

6/1   Worcester Farm Bureau Picnic - Sturgis Park, Snow Hill

6/20-21 Delmarva Chicken Festival - Queen Anne's County 4-H Park

Somerset Ext. Office ~ 30730 Park Drive ~ Princess Anne, MD 21853 ~ 410-651-1350 ~ Fax 410-651-0806
Wicomico Ext. Office ~ P.O.Box 1836 ~ Salisbury, MD 21802 ~ 410-749-6141 ~ Fax 410-548-5126
Worcester Ext. Office ~ P.O.Box 219 ~ Snow Hill, MD 21863 ~ 410-632-1972 ~ Fax 410-632-3023

Want to receive this newsletter electronically? E-mail jarrod@umd.edu and type LES AG Newsletter into the subject line.